CLAIMS

1. Method for loading nuclear fuel pellets (6) in successive columns (12) into a cladding (2) previously provided with a first plug (3) at one of its two ends, comprising the following associated operations:

- presenting, centring and aligning the pellets (6) of a column (12) from a support (38) to the open end (34) of the cladding (2); and

characterised in that, for loading of the pellets (6), the following are performed:

- correction of off-centrings between the support (38) and the open end (34) of the cladding (2), and alignment of the axis of the pellets (6) with the axis of the cladding (2), by means of a channel (42), the bottom of which has a V-shaped profile in a continuous ramp and intersecting with a cylindrical output (48) with the diameter of the pellets (6);

- centring of the cladding (2) in a chamber (49) centred on the cylindrical output (48) of the channel (42);

- masking of the open end (34) of the cladding (2) from the pellet (6) in the process of being loaded;

- trapping and/or collection and/or forcing back of dust and chips conveyed by and/or adhering to the pellets (6) loaded, and/or generated by the presentation, centring and alignment operations, via the free sections between pellets (6) and walls of the channel (42) and/or via clearances, by gravity deposition and optionally by additional blowing and/or suction.

2. Method according to Claim 1, characterised by loading of the pellets (6) of a column (12) into the cladding (2), to a depth of introduction of the last pellet (6) in the cladding (2) equal to at least the length of the next column (12) to be loaded into the same cladding (2).

3. Method according to Claim 2, characterised in that loading of said pellets (6) in successive columns (12) into said cladding (2) is performed by limiting the maximum pushing forces during loading, according to the depth of introduction and the order (N) of the column (12) in the process of being loaded into the same cladding (2).

4. Method according to any one of Claims 1 to 3, characterised in that loading of the pellets (6) takes place either under vacuum in a cladding (2) itself under vacuum, or under helium, in a cladding (2) itself filled with helium.

5. Device for loading pellets (6) into a cladding (2), in particular for implementation of the method according to any one of Claims 1 to 4, characterised in that it comprises, for presentation, centring and alignment of the pellets (6) at the input of the cladding (2), a fixed introduction element (14)

- consisting of a metal component (14) with a channel (42) passing through it, the dimensions of the input (44) of which are chosen for accepting an off-centring of the pellets (6) in relation to the axis of the cladding (2), and the bottom of which has a V-shaped profile in a continuous ramp and intersecting with a cylindrical output (48) with the diameter of the pellets (6), and provided with a cylindrical chamber (49) with the diameter of the cladding (2) and centred on the cylindrical output (48) of the channel (42);

- has dimensions and tolerances adapted to the dimensions of said pellets (6) and cladding (2), and such that the diameter

of the cylindrical part (48) of the channel (42) is smaller than the internal diameter of the cladding (2), for the purposes of masking the end (34) of the cladding (2) from the pellets (6);

- optionally has longitudinal and/or transverse trapping clearances and/or nozzles for blowing a gas in a direction opposite to the direction of loading and/or sucking up the dust and chips.

6. Device according to Claim 5, characterised in that it comprises, for the above-mentioned loading of the pellets (6), a long pushing device (50) with sensitive drive, having:

- on the one hand axial driving by a set of rollers (56) equipped with a force limiting device (54) with low inertia and driven by a motor (52), the force of which is limited according to the depth of introduction and the order (N) of the column (12) of pellets (6) in the process of being loaded into one and the same cladding (2); and

- on the other hand a hollow rod (53) of low mass and adapted length, so that the depth of introduction of the last pellet (6) of a column (12) loaded into the cladding (2) is equal to at least the length of the next column (12) to be loaded into the same cladding (2).